NEC

DATA SHEET

TRIAC

AC05DJM, AC05DJM-Z
AC05FJM, AC05FJM-Z

5 A MOLD TRIAC

DESCRIPTION

The AC05⌈⌋JM and AC05⌈⌋JM-Z are all diffused mold type triac granted RMS On-state current 5 Amps, with rated voltages up to 400, 600 volts.

FEATURES

- Small and Surface Mount Package
- 50 A Surge current
- Mold package

APPLICATIONS

- Motor speed control
- Lamp dimmer, Temperature controllers
- Various solid state switches, etc.

ABSOLUTE MAXIMUM RATINGS ($T_A = 25\ ^\circ C$)

CHARACTERISTICS	SYMBOL	AC05DJM AC05DJM-Z	AC05FJM AC05FJM-Z	UNIT	NOTE
Repetitive Peak Off Voltage	V_{DRM}	400	600	V	
Non-repetitive Peak Off Voltage	V_{DSM}	500	700	V	
RMS On-State Current	$I_{T(RMS)}$	5 ($T_C = 104\ ^\circ C$)		A	See Fig. 11
Peak Surge On-State Current	I_{TSM}	50 (50 Hz, Non-repetitive)		A	See Fig. 2
Fusing Current	$\int i_T^2\,dt$	10 (1 ms $\leq t \leq$ 10 ms)		A^2s	
Peak Gate Power Dissipation	P_{GM}	3 (f $\geq$ 50 Hz, Duty $\leq$ 10 %)		W	
Average Gate Power Dissipation	$P_{G(AV)}$	0.3		W	
Peak Gate Current	I_{FGM}	±1.5 (f $\geq$ 50 Hz, Duty $\leq$ 10 %)		A	
Junction Temperature	T_j	−40 to +125		°C	
Storage Temperature	T_{stg}	−40 to +150		°C	

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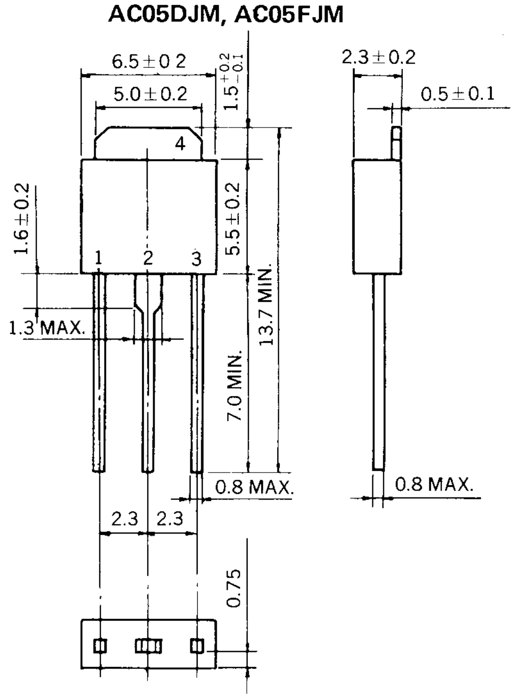
ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

CHARACTERISTIC		SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNIT	NOTE
Peak Off-State Current		I_{DRM}	$V_{DM} = V_{DRM}$		–	–	100	μA	
Peak Off-State Current		I_{DRM}	T_j = 125 °C, $V_{DM} = V_{DRM}$		–	–	1	mA	
On-State Voltage		V_{TM}	I_{TM} = 5 A		–	–	1.8	V	See Fig. 1
Gate-trigger Current	Trigger Mode I	I_{GT}	V_{DM} = 12 V, R_L = 30 Ω	T_2+, G+	–	–	10	mA	See Fig. 4
	II			T_2–, G+	–	–	–		
	III			T_2–, G–	–	–	10		
	IV			T_2+, G–	–	–	10		
Gate-trigger Voltage	Trigger Mode I	V_{GT}	V_{DM} = 12 V, R_L = 30 Ω	T_2+, G+	–	–	1.5	V	See Fig. 4
	II			T_2–, G+	–	–	–		
	III			T_2–, G–	–	–	1.5		
	IV			T_2+, G–	–	–	1.5		
Gate Non-Trigger Voltage		V_{GD}	T_j = 125 °C, $V_{DM} = \frac{1}{2} V_{DRM}$		0.2	–	–	V	
Holding Current		I_H	V_D = 24 V, I_{TM} = 5 A		–	10	–	mA	
Critical Rate-of Rise of Off-State Voltage		dV/dt	T_j = 125 °C, $V_{DM} = \frac{2}{3} V_{DRM}$		–	100	–	V/μs	
Commutating dV/dt		(dV/dt)C	T_j = 125 °C $(di_T/dt)C$ = –2.7 A/ms V_{DM} = 400 V		5	–	–	V/μs	
Thermal Resistance		$R_{th(j-c)}$	Junction to Case		–	–	3.0	°C/W	See Fig. 13
Thermal Resistance		$R_{th(j-a)}$	Junction to Ambient*		–	–	62.5	°C/W	AC05DJM-Z AC05FJM-Z

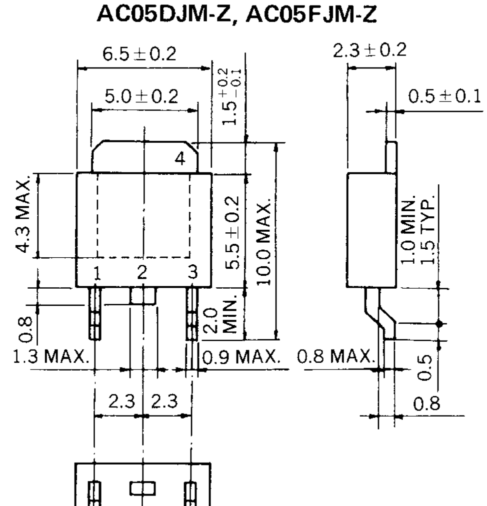
* Mounted on ceramic substrate of 7.5 cm^2 × 0.7 mm.

PACKAGE DIMENSIONS
(Unit : mm)

AC05DJM, AC05FJM



AC05DJM-Z, AC05FJM-Z



Pin Connection
1. T_1
2. T_2
3. Gate
4. Fin (T_2)

CHARACTERISTICS (T_A = 25 °C)

Fig. 1 $i_T - v_T$ CHARACTERISTIC

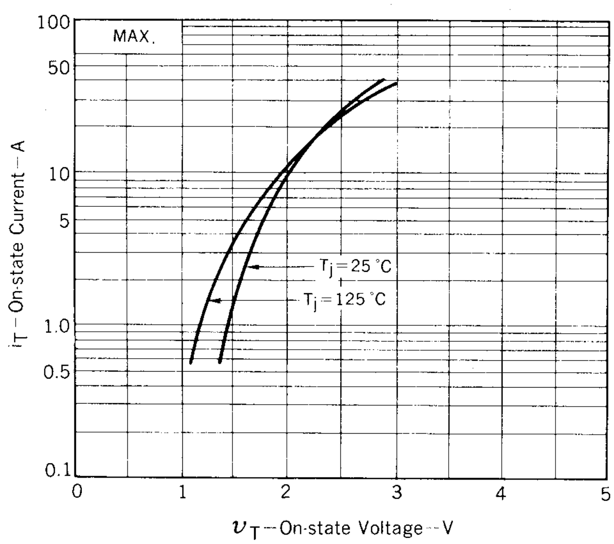


Fig. 2 I_{TSM} RATING

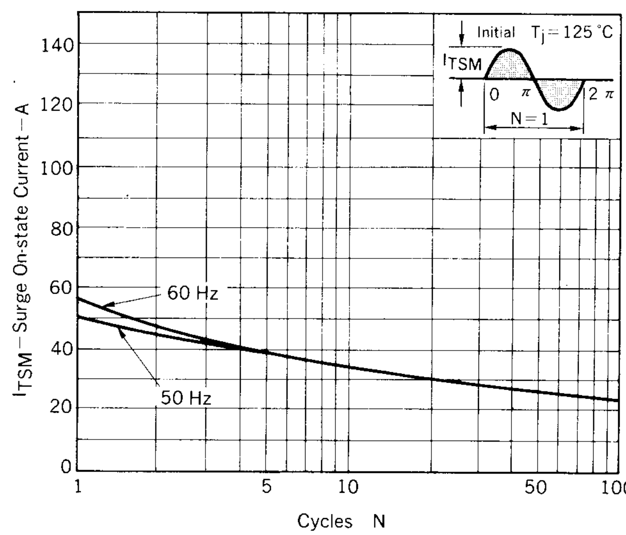


Fig. 3 $V_G - I_G$ RATING

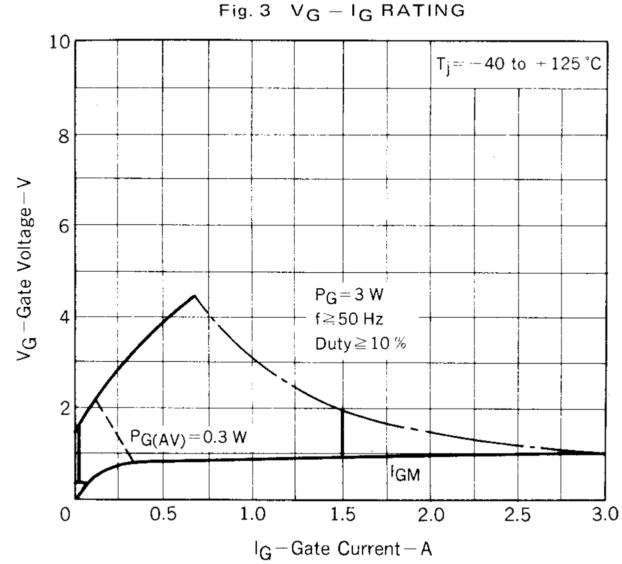


Fig. 4 $V_{GT} - I_{GT}$ TYPICAL CHARACTERISTIC

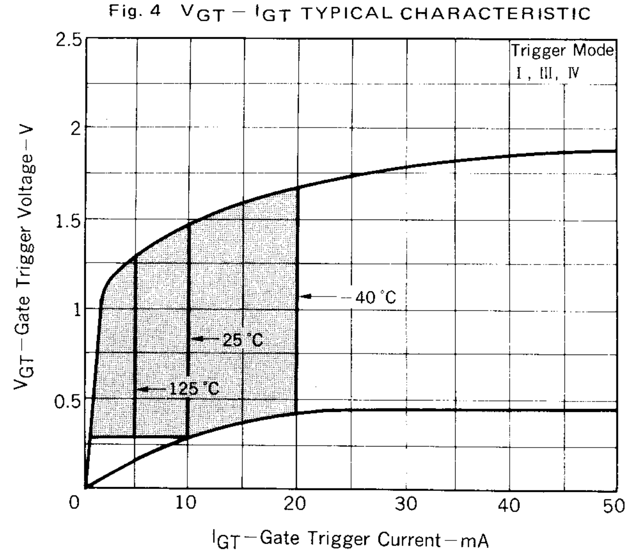


Fig. 5 $I_{GT} - T_A$ TYPICAL DISTRIBUTION

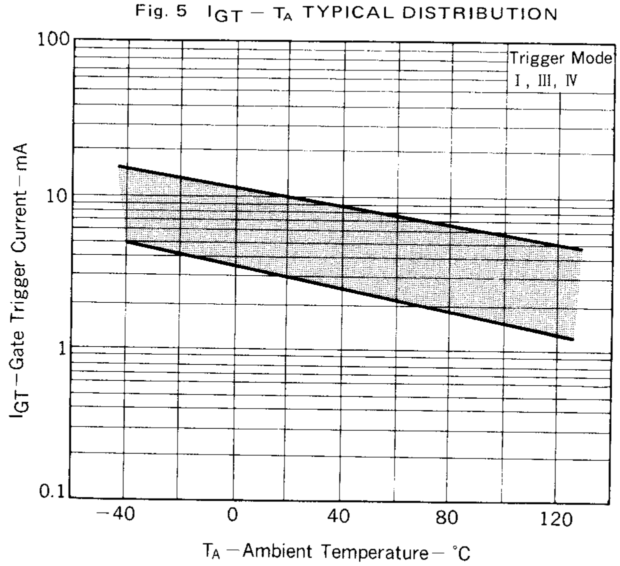


Fig. 6 $V_{GT} - T_A$ TYPICAL DISTRIBUTION

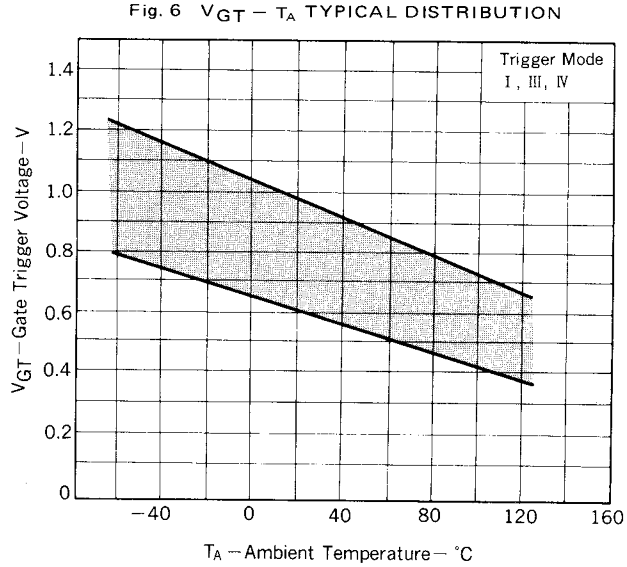


Fig. 7 $i_{GT} - \tau$ TYPICAL DISTRIBUTION

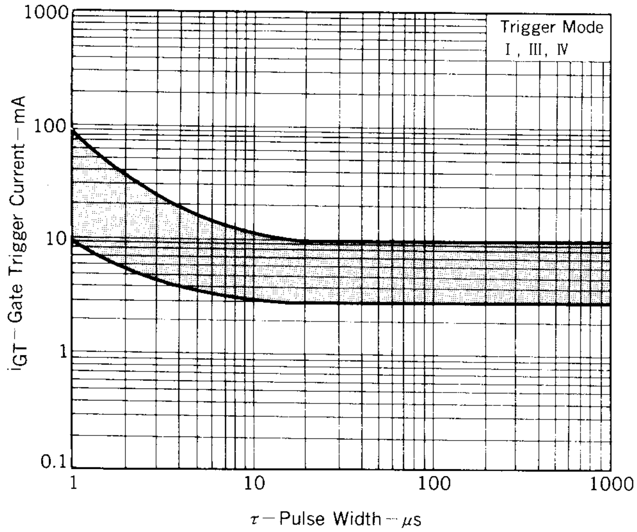


Fig. 8 $v_{GT} - \tau$ TYPICAL DISTRIBUTION

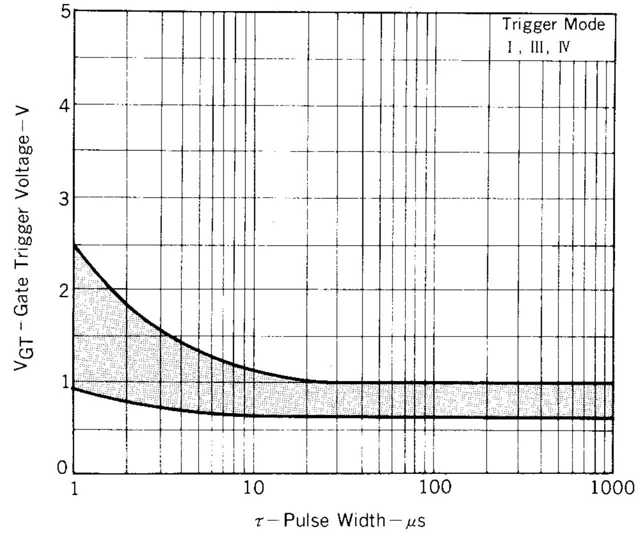


Fig. 9 $I_H - T_A$ TYPICAL DISTRIBUTION

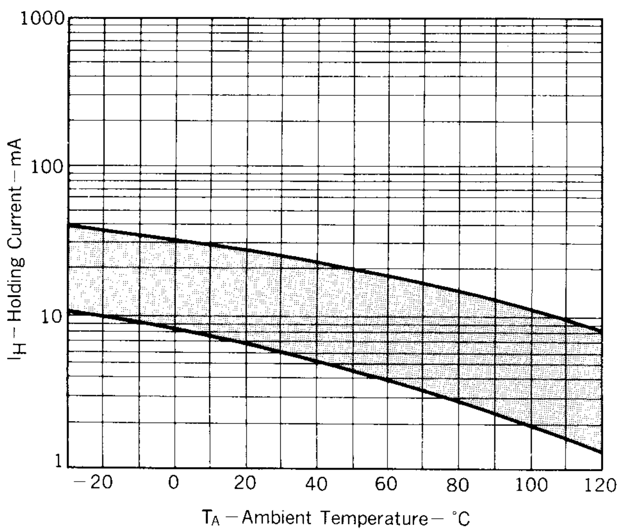


Fig. 10 $P_{T(AV)} - I_{T(RMS)}$ CHARACTERISTIC

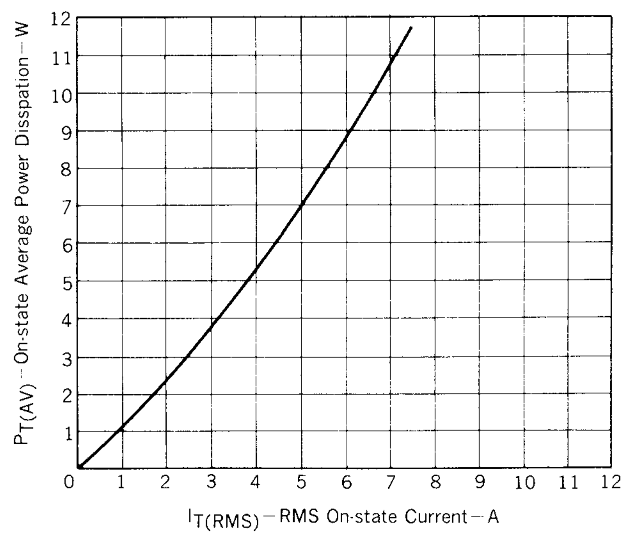


Fig. 11 $T_C - I_{T(RMS)}$ RATING

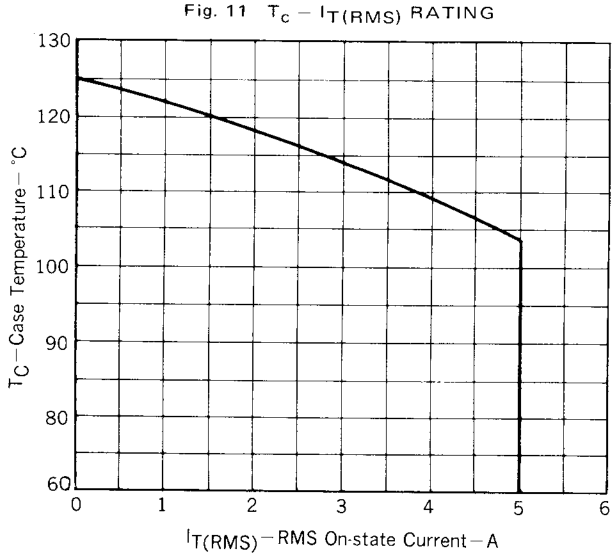


Fig. 12 $T_A - I_{T(RMS)}$ RATING

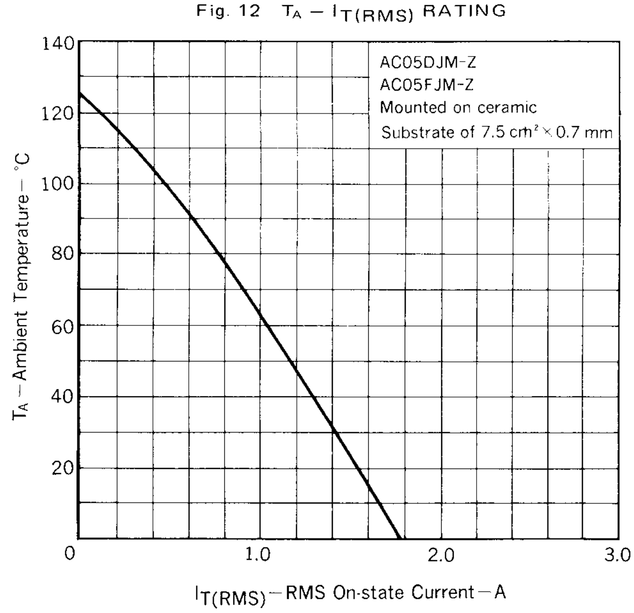
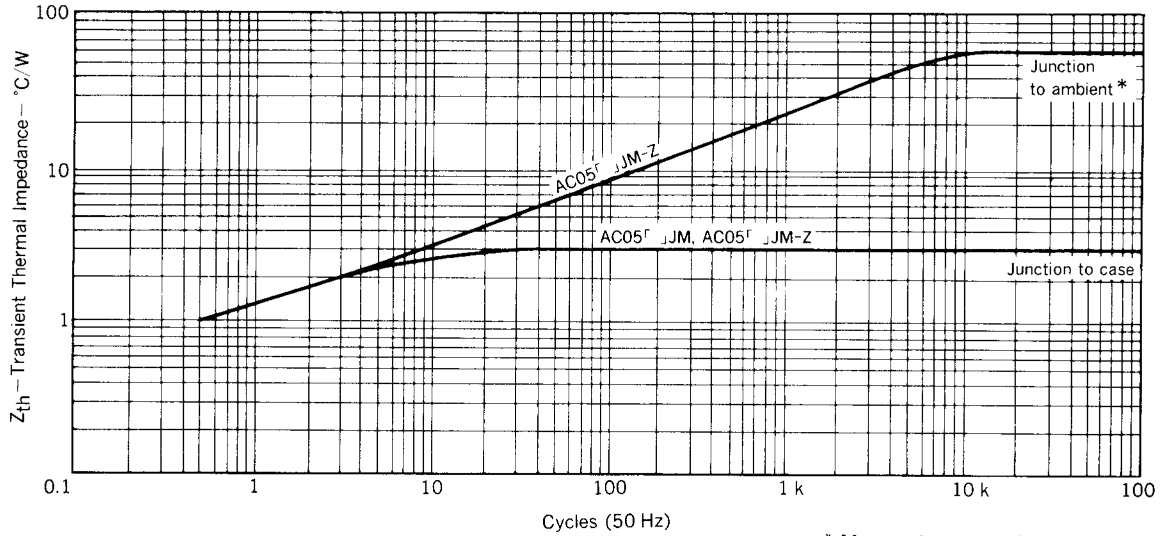


Fig. 13 Z_{th} CHARACTERISTIC



* Mounted on ceramic substrate of 7.5 cm² x 0.7 mm

REFERENCE

APPLICATION NOTE NAME	No.
GUIDE TO QUALITY ASSURANCE FOR SEMICONDUCTOR DEVICES	MEI-1202
SEMICONDUCTOR DEVICE MOUNTING TECHNOLOGY MANUAL	C10535E

[MEMO]